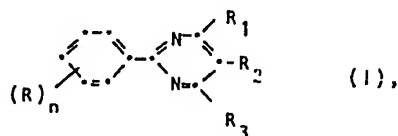


Publication number: EP0136976 A2
 Publication date: 1985-04-10
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 Application number: EP19840810408 19840820
 Priority number(s): CH19830004614 19830823

Use of Phenyl pyrimidines as plant regulators.

Phenylpyrimidines of the formula I defined below are suitable for the adjustment of the plant stature. They can be used for different purposes like e.g., be stood measures with the increased returns of useful plants, harvest easement and operational saving furthermore increase of the break and weather resistance of the plants in the connection. The Phenylpyrimidine corresponds to the formula I



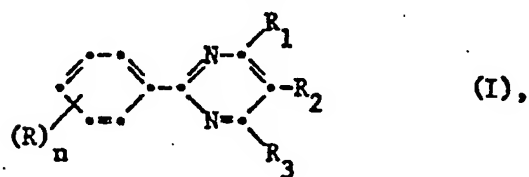
where R hydrogen, halogen, Nitro cyanogen optionally substituted alkyl, hydroxy optionally substituted Alkoxy, optionally substituted alkenyl, Alkynyl, Alkenyloxy, Alkinyloxy, Sulfhydryl, Alkylthio, Carboxy, Alkylcarbonyl, Alkoxy carbonyl, Alkylcarbonyl, Alkylcarbonyloxy, Alkylaminocarbonyl, amino, alkyl amino, acetyl amino, Ureido, sulphonyl, alkyl sulphonyl, Sulfamoyl, Alkylsulfamoyl or Alkoxyphosphonylmethyl

R₁ and R₃ independently for each hydrogen, halogen, alkyl, cyanogen, hydroxy, Alkoxy, Alkoxyalkoxy, Alkoxy carbonyloxy, amino, alkyl amino, Morpholino or Sulfhydryl and R₂ hydrogen, halogen, alkyl, halogen alkyl or Phenyl mean.

CIBA-GEIGY AG Basel (Schweiz)

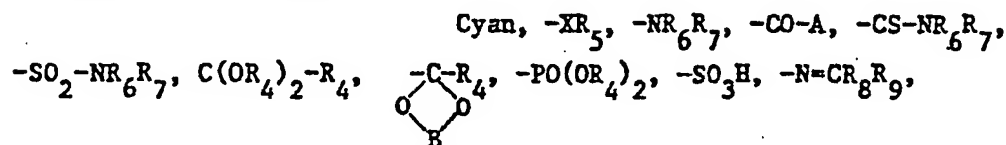
Use of Phenylpyrimidines as plant regulators the available invention concerns a procedure for the adjustment of plant growth by means of Phenylpyrimidines as well as the use of these substances for the controlling of physiological procedures in the plant metabolism.

The Phenylpyrimidine corresponds to the formula I



where

n a number from 1 to 5,
R hydrogen, halogen, Nitro,



an unsubstituted or by halogen, $-XR_5'$ - NR_6R_7 - $PO(OR_4)_2$, $-CO-A$ or cyanogen substituted C1-C6-Alkyl or C3-C6-Cycloalkylgroup or an unsubstituted or by halogen or $-XR_4$ substituted C2-C6-Alkenyl, C3-C6-Cycloalkyl or C3-C6-Alkynylgroup, R1 and R3 independently for each hydrogen, halogen, C1-C6-Alkyl, cyanogen, $-CO-A$, $-NR_6R_7$, $-XR_5$ or unsubstituted or by halogen, C1-C4-Alkyl, Nitro or $-XRS$ substituted Phenyl, R2 hydrogen, halogen, unsubstituted or by halogen, C1-C4-Alkyl, tri fluorine methyl, Nitro or $-XR_5$ substituted Phenyl or an unsubstituted or by halogen or $-XRS$ substituted C1-C6-Alkyl C3-C6-Cycloalkyl C2-C6-Alkenyl or C2-C6-Alkynyl group,

R4 hydrogen, an unsubstituted or by halogen, $-CO-A$, hydroxy, C1-C6-Alkoxy or $-NR_6R_7$ substituted C1-C6-Alkyl or C3-C6-Alkenyl or C2-C6-Alkynylgroup,

R5 the same like R4, in addition C1-C6-Alkylcarbonyl, C3-C6-Alkenylcarbonyl, C3-C6-Alkynylcarbonyl,

R6 and R7 independently for each hydrogen, C2-C6-Alkenyl, C2-C6-Alkynyl or unsubstituted or through $-CO-A$ substituted C1-C6 alkyl, or one of the remainders of R6 and R7 means a group $-COA$ or $-OR_4$ or

R6 and R7 together 4 - to 6-gliedrige an alkyl chain, which can be interrupted by oxygen, sulfur, one lmino or C1-C4-Alkylaminogroup,

B a branched or normal C1-C6-alkylene chain and

X oxygen, sulfur, $-SO$ or $-SO_2$ mean,

A the same meaning as R4 has or for $-OR_4$ or $-NR_6R_7$ stands,

R8 unsubstituted or alkyl replaced with Cl-C6-Alkoxy,

R9 hydrogen or the same like R8 or

R8 and R9 together a 4-5- alkyl chain mean.

Such Phenylpyrimidine and its use for the antagonization of the phytotoxic effect of herbicidal ones on cultivated plants were described in the EP-A-55693.

It was found surprising now that the active substances of the formula I and/or means, which is characterized these active substances contained, above all by the fact that they intervene purposefully in the metabolism of the plants. This purposeful interference into the physiological procedures of the plant development makes the active substances of the formula I for different purposes usable, in particular for such, those with the increased returns with useful plants, which harvest easement and the operational saving in measures at plant cultures in the connection.

To the impact of plant growth regulators it applies after the past experience that an active substance can have or also several different effects on plants. The effects of the materials hang essentially off of the time of application, related to the development stage of the seed or the plant as well as of the active substance quantities yielded on the plants or their environment and of the species of the application. In each case growth regulators are to positively affect the cultivated plants in desired way.

Plant-stature-adjusting materials can be used for example for the inhibition of vegetative plant growth. A such stature inhibition is among other things with grasses of economic interest, because thus e.g. the frequency of the grass cuts in ornamental gardens, park and sport can rested or against edges of road to be reduced. Of importance also the inhibition of the stature of herb plants and getting goats plants at edges of road and in close proximity to overhead power lines is or completely general in ranges, within which a strong vegetation is unwanted.

Important also the use from growth regulators is to the inhibition of length growth with grain, because by a stem halmverkürzung the danger of the Snapping ("storing") of the plants before the harvest is reduced or eliminated perfectly. In addition growth regulators can cause a stem reinforcement, which likewise works against storing with grain.

An inhibition of vegetative growth permits with many cultivated plants a closer cultivation to the culture, so that an increment, related to which floor space can be obtained.

A further mechanism. it is based to the increased returns with growth retarding on the fact that the nutrients benefit in stronger measure of the bloom and fruit formation, while vegetative growth is limited.

With growth regulators frequently also a promotion of vegetative growth can be obtained. This is very useful, if the vegetative plant parts are harvested. In addition, a promotion of vegetative growth can lead at the same time to a promotion of generative growth, so that e.g. more or larger fruits come to the training.

Increased returns can be achieved in some cases also by an interference into the vegetable metabolism, like e.g. by increase of the photosynthesis achievement, without changes of vegetative growth become apparent. Furthermore growth regulators can cause a change of the composition of the plants, so that a better quality of the harvest products is caused. Like that it is for example possible, the content of sugars in sugar beets, sugar cane, to increase pineapple as well as for citrus fruits or to increase the protein content in Soja or grain.

Under the influence of growth regulators it can come to the training of parthenokarper fruits. Furthermore the sex of the blooms can be affected.

With growth regulators leaves itself, also of secondary plant materials positively affect production or the discharge. As example the stimulation of the Latexflusses is mentioned with Gummibäumen.

During the growth of the plant also the lateral bypass can be increased by a chemical refraction of apical dominance by employment by growth regulators. To it interest e.g. exists with the Propagation by cutting of plants. It is however also possible to restrain the growth of the side impulses to e.g. prevent in order with tobacco plants after the decapitation the training from side impulses to and to promote thus sheet growth.

By use of growth regulators the premature case of fruit can be prevented. It is however also possible, the case of fruit, - for example with fruit -, to promote in the sense of a chemical thinning out up to a certain extent. Growth regulators can also serve in order to decrease with cultivated plants at the time the harvest the strength necessary for the replacement of the fruits, so that a mechanical evaluation of the plants makes possible, and/or a manual evaluation is facilitated.

With growth regulators furthermore an acceleration or also a delay can be reached the ripe one of the harvested crop before or after the harvest. This is of advantage special, because thereby an optimal adjustment can be caused to the needs of the market. Further growth regulators in some cases can improve the fruit from coloring. In addition also a temporal concentration the ripe one can be obtained by growth regulators. Thus conditions for the fact are created that e.g. with tobacco, tomatoes or coffee, a complete mechanical or manual evaluation in only one processing step can be made.

Also the Samenoder bud peace of the plants, thus the endogenous Jahresrhythmik, can be affected by the use of growth regulators, so that the plants, how e.g. pineapple or ornamental plants germinates, drives out or flowers in market gardens, at one time, on which they show normally for this no readiness.

With growth regulators it can be also achieved that drove by buds or germinating out of seeds one retards to e.g. avoid in order in frost-endangered areas a damage by late frosts. On the other hand succeeds stimulating root growth too and/or the training from offshoots to so that growth can be limited to a shorter length of time.

Furthermore know a larger, better formed and deeper root work an improved stress overcoming (with cold weather and dryness), better utilization of the soil nutrients, and an intensified competition strength opposite weeds to cause and to the increased returns lead in such a way.

With growth regulators also the seed germinating under suboptimal conditions (e.g. cold weather) can be promoted. This makes an earlier sowing for the culture possible, a better establishment under suboptimal conditions and can 50 to the increased returns contribute.

Growth regulators can produce also a Halophilie with the cultivated plants. Thus the conditions for the fact are created that a cultivation of plants on salt containing soils can be accomplished.

With growth regulators also a frost and a drying resistance can be induced with plants.

Under the influence of growth regulators aging (the Seneszenz) can by plants or plant parts restrained respectively be retarded. Such an effect can be from high economic interest. thus. that with treated plant parts or whole plants such as fruit, berries, vegetables, salad or ornamental plants their shelf-life can be improved or extended after the harvest. Likewise considerable increased returns can be obtained by treatment by cultivated plants over an elongation of the phase of photo-synthetic activity.

A further important area of application for plant growth inhibitor is their employment for the inhibition of an excessive growth with tropical Bodenbeckungspflanzen, the so-called Cover crops. In tropical and subtropical Monoculture, as e.g. in Palm plantation, cotton, corn fields etc. beside the actual cultivated plants ground cover plants, in particular Leguminosenarten, are often cultivated which for the preservation or increase of the soil quality (prevention of the drainage, supply of nitrogen) and for the prevention of erosion (demolition by wind and water) to serve. According to invention now the growth of these Cover can crops be controlled and thus the stature height of these Rodenbedeckungspflanzen on a low level be held by application of the active substances, so that healthy prospering of the cultivated plants and the maintenance of a favorable ground condition are ensured.

The plant regulator effect is schwerpunktmässig with the stimulating of root growth and the germ promotion.

An improved root work can contribute to the overcoming of stress conditions, like drynesses. Furthermore thereby a better nutrient admission can be expected. In this sense it is to be emphasized that an influence of the root value in the positive sense can contribute to the yield safety device and increased returns.

The germ promotion by means of these substances on stress conditions such as wetness, cold weather etc., can make of importance be for regular accumulating of the seeds independently of stress factors, can earlier sowing possible and thus possibly a developing ensure (elongation of the vegetation time), furthermore can thereby in climatological edge zones possibly the culture surface area be expanded. In this sense also the germ promotion is to be regarded by means of chemicals as a means to the yield safety device on the one hand and on the other hand to the increased returns.

For the influence of the plant metabolism those Phenylpyrimidines of the formula I attained special meaning, where

n a number from 1 to 3,

R hydrogen, halogen, Nitro, cyanogen,

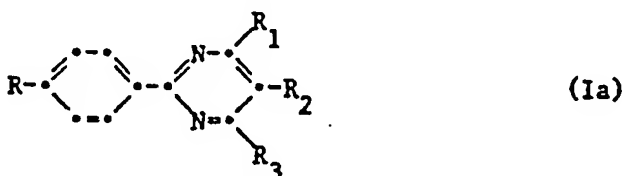
C₁-C₄-Alkyl, C₁-C₄-Halogenalkyl,
 C₁-C₄-Cyanoalkyl, Hydroxyl, (C₁-C₄-Alkoxy)_n, C₁-C₄-Halogenalkoxy,
 C₂-C₈-Halogenalkoxyalkyl, C₂-C₄-Alkenyl, C₂-C₄-Halogenalkenyl, C₂-C₄-
 Alkenyloxy, C₂-C₄-Alkynyl, Sulfhydryl, C₁-C₄-Alkylthio, Carboxyl,
 C₁-C₄-Alkylcarbonyl, C₁-C₄-Alkoxycarbonyl, C₂-C₄-Alkenylcarbonyl,
 C₂-C₄-Alkynylcarbonyl, C₁-C₄-Alkylcarbonyl-C₁-C₄-alkyl, C₁-C₄-Alkyl-
 carbonyloxy, C₁-C₄-Alkylaminocarbonyl, C₁-C₄-Dialkylaminocarbonyl,
 Amino, C₁-C₄-Alkylamino, C₁-C₄-Dialkylamino, Acetyl-amino, Chloracetyl-
 amino, Methylureido, Dimethylureido, Sulfonyl, C₁-C₄-Alkylsulfonyl,
 Sulfamoyl, C₁-C₄-Alkylsulfamoyl, C₁-C₄-Dialkylsulfamoyl, C₁-C₄-Alkoxy-
 carbonylsulfamoyl, C₁-C₄-Dialkoxyphosphonylmethyl

R1 and R3 independently for each hydrogen, halogen,

C₁-C₆-Alkyl,
 Cyan, Hydroxy, C₁-C₆-Alkoxy, C₂-C₈-Alkoxyalkyl, Phenyl, Phenoxy,
 C₁-C₄-Alkoxy-carbonyloxy, Amino, C₁-C₄-Alkylamino, C₁-C₄-Dialkylamino,
 Morpholino, Sulfhydryl
 and

R3 hydrogen, halogen, C1-C6-Alkyl, C1-C6-Halogenalkyl or Phenyl mean.

As particularly suitable stature regulators the 2-Phenylpyrimidine of the formula proved 1a, where



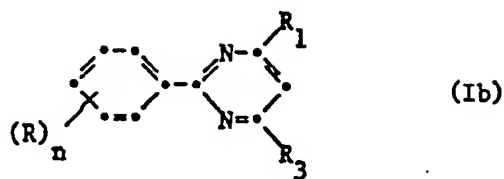
where R hydrogen or methyl

R1 hydrogen, halogen, C1-C6-Alkyl, hydroxy, C1-C6-Alkoxy, C2-C8-Alkoxyalkyl, Phenyl, Phenoxy,
 C1-C4-Alkoxy-carbonyloxy, amino, C1-C4-Alkylamino, C1-C4-Dialkylamino, Morpholino or
 Sulfhydryl,

R2 hydrogen, halogen, C1-C6-Alkyl or Phenyl,

R3 halogen, hydroxy, C1-C6-Alkoxy, C2-Cs-Alkoxyalkyl, Phenoxy or Sulfhydryl mean.

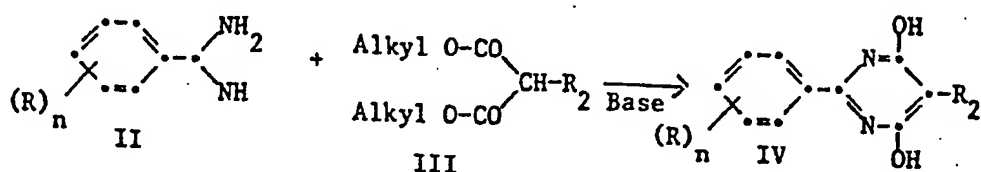
Likewise excellent plant stature regulators are the 2-Phenylpyrimidine of the formula Ib



where n, R, R1 and R3 have the meaning given above. As single compounds were noticeable:
2-Phenyl-4,6-dichlorpyrimidin. 2 (4-Methoxycarbonylamidophenyl) - 4,6-dichlorpyrimidin.

The Phenylpyrimidine of the formula I can be manufactured by well-known synthesis ways. The 2-Phenylpyrimidinring is manufactured e.g. by condensation of a Phenylamidins with a malonic acid derivative.

Such 2-Phenylpyrimidine becomes for example resulting by the fact that one condenses in alcoholic-basic solution a Phenylamidin with a malonic acid dialkyl ester



and then gewünschtenfalls at the maintained 2-Phenyl-4,6-dihydroAJ-pyrimidin of the formula IV the hydroxyl groups by means of Halogenierungsmitteln (Phosphoroxchlorid, Phosphoroxbromid, Sulfurylchlorid, Bromsuccinimid etc.) by halogen atoms and also these gewünschtenfalls by further-radicals of R1 and R3 replaces.

If R2 hydrogen means, this can be replaced e.g. by effect letting of chlorine or bromine in a polar solvent like e.g. glacial acetic acid.

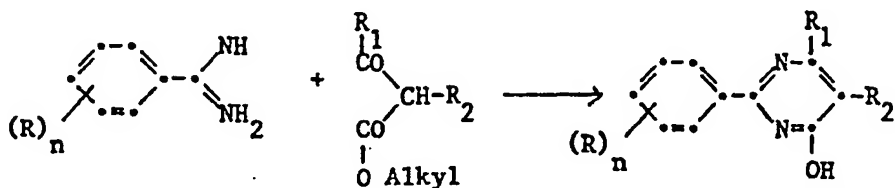
The halogen atoms in the positions 4, 5 and 6 of the Pyrimidinringes again can be replaced for their part in well-known way by alcohols, Merkaptane or amines.

See in addition. e.g. J. Chem. Soc. 1965, P. 5467-5473,

J. prakt. chem. 312 (1970), P. 494-506.

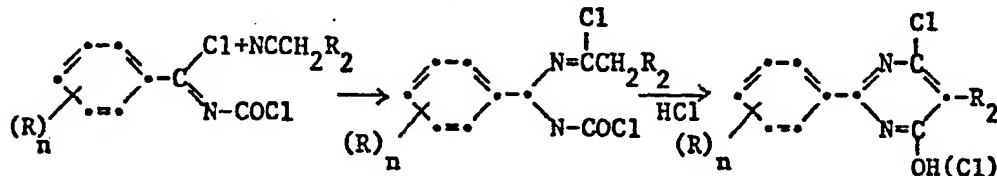
J. chem. SOCa Perkin of Trans 1 1977, P. 2285-6.

Phenylpyrimidine, in which R1 is to mean an alkyl or a Phenylrest, become for example resulting by condensation of a Phenylamidins with an alkyl ester of a Acetessig acid .

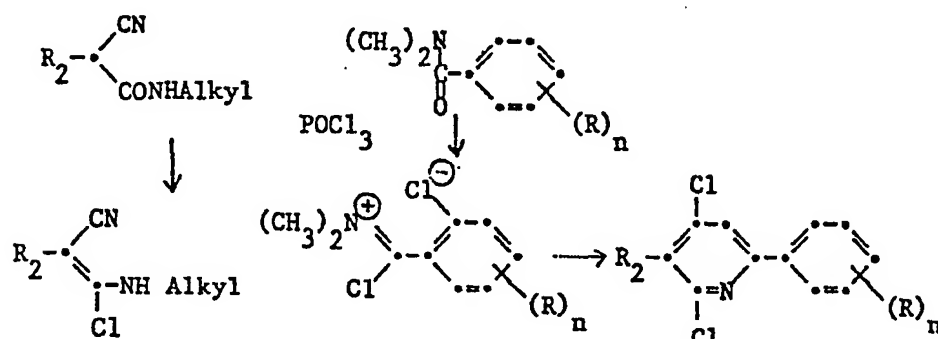


Also here can - OH group then in well-known way by a Halogenatom and this further by an alcohol, Thiol or an amine to be replaced.

Furthermore succeeds manufacturing e.g. also 2-Phenyl-4,6-dichlorpyrimidin and 2-Phenyl-4-chlor-6-hydroxypyrimidine by conversion of Chlorbenzyliden-carbamoyl-chloride with an aliphatic nitrile to presence of hydrogen chloride



See in addition Bull. Soc. Chem. Japan 44 (1971), P. 2182-2185. 2-Phenyl-4,6-dichlorpyrimidin leaves itself for example in accordance with Ang. Chemistry 89 (1977), P. 816-817 for example by condensation of a N-Phenylcyanamid and a N, N-Dialkylamid in POC13 at 1000 resulting.



In the above formulas have R, R2 and n the meaning given in formula I.

The synthesis of such compounds or the exchange of remainders of R1, computer center and R3 by other substituents given in the definition is not constituent of the invention. For the production of these compounds we refer to the examples or to the technical literature. See in addition also „The Chemistry OF Heterocyclic compounds to " 16 Interscience Publishers, New York 1962 pages 119 FF.

The compounds of the formula I can be used for itself alone or together with other active substances.

Compounds of the formula I are used in unchanged form or preferably together with the aids usual in the formulation technology and processed therefore e.g. to emulsion concentrates, directly sprayable or dilutable solutions, diluted emulsions, wettable powder, soluble powders, types of dust means, granulates, also encapsulations in e.g. polymere materials in well-known way. The operating techniques such as spraying, an atomizing, types of dust, a scattering or a pouring are selected accordingly equal as the species of the means the objectives and given conditions.

The formulations, i.e. those the active substance of the formula I and optionally a solid or liquid additive containing means, preparing or compositions manufactured in well-known way, e.g. by intimate mixing and/or meals of the active substances with stretching means, like e.g. with solvents, solid carrier materials, and optionally surface-active compounds (surfactants).

As solvents can be applicable: , The fractions C8 to C12, substituted like xylene mixtures or naphtha LINE, Phthal acid ester e.g. prefers aromatic hydrocarbons such as Dibutyl or Dioctylphthalat, aliphatic hydrocarbons such as cyclohexane or paraffins, alcohols and glycols as well as their ether and ester, like

ethanol, ethylen glycol, ethylen glycol mono methyl or ethyl ether, Ketone such as cyclohexanone, strongly polar solvents such as N-Methyl-2-pyrrolidon, Dimethylsulfoxid or dimethylformamide, as well as vegetable oils woe epoxydiertes coconut oil or Sojaöl epoxydierte optionally; or water.

When solid of carrier materials, e.g. for types of dust means and dispersable powders become, usually natural powdered minerals used, like Calcit, talcum powder, kaolin, Montmorillonit or Attapulgit. For the improvement of the physical characteristics also hochdisperse silicic acid or hochdisperse absorbent polymers can be added. As roughened, adsorbates granulates carriers are applicable porous types, like e.g. pumice stone, brick break, Sepiolit or Bentonit, as not sorptive substrates e.g. Calcit or sand. In addition a multiplicity of before-granulated materials of inorganic or organic nature can like in particular dolomite or cut up plant arrears to be used.

As surface-active compounds nichtionogene, cation and/or anion-active surfactants with good emulsifying, come dispersion and net characteristics into consideration depending upon the species of the active substance of the formula I which can be formulated. By surfactants also surfactant mixtures are to be understood.

Suitable ones of anionic surfactants can be both so-called water-soluble soaps and water-soluble synthetic surface-active compounds.

As soaps are suitable the alkali, alkaline-earth or optionally substituted ammonium salts of higher fatty acids (C₁₂-C₂₂), like e.g. the well or K-salts of the oil or stearic acid, or of natural fatty acid mixtures, which can be obtained e.g. from coconut or tallow oil. Furthermore also the fatty acid methyl taurinsalze is to be mentioned.

More frequently however so-called synthetic surfactants used, in particular Fettsulfonate, fat sulfates, sulsonierte Benzimidazolderivate or Alkylarylsulfonate.

The Fettsulfonate or - sulfates are appropriate usually as alkali, alkaline-earth or optionally substituted ammonium salts four and exhibit an alkyl residue with 8 to 22 C-atoms, whereby alkyl includes also the alkyl part of acyl radicals, e.g. the well or approx.-salt of the lignin sulfone acid, the Dodecylschwefel acid esters or for out natural fatty acids a manufactured fat alcohol sulfate mixture. Here also the salts of the sulphuric acid esters and sulfone acids of Fettalkohol Aethylenoxid adducts belong. The sulfonierten Benzimidazolderivate contains preferably 2 groups of sulfone acids and a fatty acid remainder with 8-22 C-atoms. Alkylarylsulfonate are e.g. the well, approx. or tri ethanol amine salts of the Dodecylbenzolsulfon acid, the Dibutylnaphthalinsulfon acid, or a Naphthalinsulfon acid Formaldehydkondensationsproduktes.

Furthermore also appropriate phosphates are e.g. applicable, like salts of the phosphoric acid ester of a p-Nonylphenol (4-14) - ethylene oxide adduct.

As non-ionic surfactants mainly Polyglykolätherderivate of aliphatic or cyclo-aliphatic alcohols, saturated or unsaturated fatty acids and Alkylphenolen are applicable, which 3 to 30 groups of glycol ethers and 8 to 20 carbon atoms in (aliphatic) the hydrocarbon remainder and 6 to 18 carbon atoms in the alkyl residue that alkyl phenol can to contain.

Further suitable non-ionic surfactants are containing the water-soluble, 20 to 250 groups of ethylen glycol ethers and 10 to 100 groups of propylene glycol ethers PL oxide adducts at polypropylene glycol,

Aethylendiaminopolypropylenglykol and alkyl polypropylene glycol with 1 to 10 carbon atoms in the alkyl chain. The compounds mentioned contained usually pri propylene glycol unit 1 to 5 ethylen glycol units.

When examples of non-ionic surfactants are Nonylphenolpolyäthoxyäthanol, Ricinussölpolyglykoläther, Polypropylen-Polyäthylenoxyaddukte, Tributylphenoxypolyäthoxyäthanol, PL glycol and Octylphenoxypolyäthoxyäthanol mentions.

Furthermore also fatty acid esters of Polyoxyäthylensorbitan are possible as Polyoxyäthylensorbitan trioleat.

With the kationischen surfactants it concerns particularly quart acres of ammonium salts, which exhibit as N-substituents at least one alkyl residue with 8 to 22 C-atoms contained and as further substituents low, optionally halo genius ores Alkyl, benzyle or low hydroxyalkyl remainders. The salts are present preferably as halides, methyl sulfates or ethyl sulfates, e.g. the Stearyltrimethylammoniumchlorid or the Benzyldi (2-chloräthyl) ethyl ammonium bromide.

The surfactants common in the formulation technology are among other things in the following publications described:

"Mc Cutcheon's Detergents and Emulsifiers Annual" MC Publishing Corp., Ringwood, New Jersey, 1979.

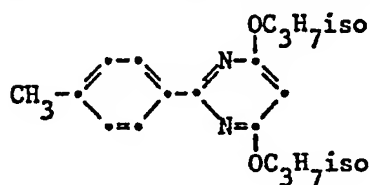
Sisely and Wood, "Encyclopedia of Surface Active Agents", Chemical Publishing Co., Inc. New. York, 1964.

While as commercial product means rather concentrated are preferred, the final consumer uses usually diluted means.

The means can contain also further additives such as stabilizers, antifoaming agents, viscosity regulators, bonding agents, bonding agents, as well as fertilizers or other active substances for the achievement of special effects.

In the following examples the temperatures are indicated in centigrades, per cent and data of "parts" refer to the weight.

Example 1:2 - para-Tolyl-4,6-bis-isopropoxy-pyrimidin



(a) One solves 21.16 g sodium in water-free isopropanol. Into the developed solution one introduces 95.64 g 4,6-Dichlor-2-para-tolyl-pyrimidin thereafter with 60-65°C within 15 minutes. The mixture is heated up anschliessend for simmering and further-cooked for the completion of the reaction still 4 hours at the return flow. Then the surplus Isopropanol abdestilliert and the oil staying is taken up to chloroform. The chloroform stratum is dried washed with water, over sodium sulfate, abdestilliert

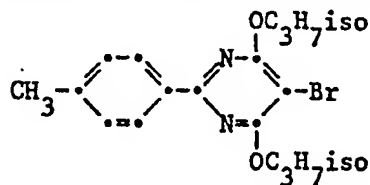
filtered and the solvent. One maintains so 112 g 2-para-Tolyl-4,6bis-isopropoxy-pyrimidin as yellowish oil, which one distills for cleaning at the high vacuum. The boiling point amounts to 123°C/5,332 Pascal.

The 2-para-Tolyl-4,6-dichlor-pyrimidin needed as output product is manufactured in the following way:

b) 102.3 g p-Tolylamidinhydrochlorid and 99.3 g Malon acid diäthylester are angeschlämmt in 520 ml water-free ethanol. Under good agitating and cooling one lets 323.7 g of a 307.igen sodiummethylatlösung flow now. Afterwards to the return flow one heats up and 4 to 5 hours at the return flow one agitates. After Abdestillation of the solvent the arrears are taken up to 1000 ml water, heated up on 80°C and filtered the something gloomy solution over silicic acid. After the cooling with 157.iger hydrochloric acid is acidified. The thick crystal mash is filtered off, washed with water and dried with 100°C. One maintains 100-110 g 2-para-Tolyl-4,6-Dihydroxypyrimidin, melting point 314°C (decomposition).

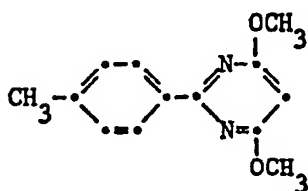
(c) 72.6 g of the Dihydroxy compound are heated up with 72,6 g N, N-Dimethylanilin and 363 g Phosphoroxchlorid for simmering and one hour at the return flow is agitated. According to Abdestillation of the surplus Phosphoroxchlorids the product staying, for the removal of the still adhering Phosphoroxchlorids, is treated with ice water, washed according to it with ice water finely ground, abfiltriert, with ice water and dried with 40-50°C in the vacuum. One maintains so 85.9 g 2-para-Tolyl-4,6-dichloro-pyrimidin from the melting point 86-87°C.

Example 2:2 - para-Tolyl-4,6-bis-isopropoxy-5-brom-pyrimidin



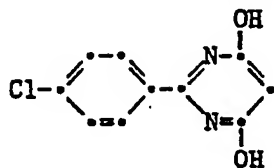
One heats 111.7 g up 4,6-Di-isopropoxy-2-para-tolyl-pyrimidin and 450 ml carbon tetrachloride on 70-75°C. To the developed solution one gives 0.5 g Dibenzoylperoxid and afterwards within 45 minutes a mixture of 1 g to Azoisobutyronitril and 70.8 g N-Bromsuccinimid. For the completion of the reaction still 2 hours at the return flow one heats up. The precipitated Succinimid is then filtered off and the surplus carbon tetrachloride is abdestilliert. One maintains 141 g title product, which exhibits a melting point of 74-75°C after treatment with methanol for cleaning.

Example 3:2 - para-Tolyl-4,6-dimethoxy-pyrimidin



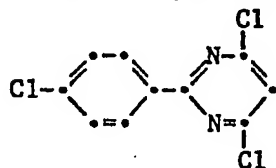
156.1 g of a 30,5%igen sodiummethylatlösung are mixed with 700 ml water-free methanol. Into the solution now within 10 minutes under more easily cooling 95.64 g 2-para-Tolyl-4,6-dichloro-pyrimidin are introduced. Afterwards return flow one heats up and one holds 4 hours at simmering. After redistillation of the solvent the product staying is introduced in 1000 ml water. The removal of developed sodium chloride finely ground become with water. Afterwards filters off, with water washed and at air dried. One maintains so 90.4 g title compound with a melting point from 61-62°C.

Example 4:2 - para-Chlorphenyl-4,6-dihydroA~~pyrimidin



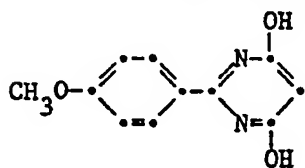
To a suspension of 38,2 g 4-Chlorbenzylamidin-Hydrochlorid and 33.6 g Malonic acid diäthylester in 175 ml one gives 108 g 30%ige sodiummethylat/Methanol-Lösung to methanol within 10 minutes and cooks for anschliessend the whole during 5 hours at the return flow. Then the solvent at the rotation evaporators abdestilliert and the arrears is taken up and filtered to 1000 ml hot water. The filtrate is acidified on pH 1, the precipitated deposit is then filtered off and dried in the vacuum with 80°C. One maintains so 44 g 2-para-Chlorphenyl-4,6-dihydroxypyrimidin with a melting point from 333°C (decomposition).

Example 5:2 - para-Chlorphenyl-4,6-dichlor-pyrimidin



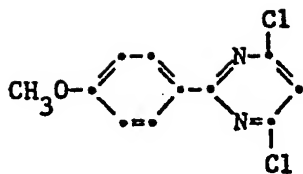
To 22 ml N, N-Dimethylanilin one drips at ambient temperature 50 ml Phosphoroxychlorid (POC13), then under cooling, so that the temperature remains below 40°C, 22.3 g 2-para-Chlorphenyl-4,6-dihydroxy-pyrimidin portion wise is admitted and 2 hours at ambient temperature agitated, afterwards still 2 hours under return flow cooked. The reaction mixture is restricted afterwards at the rotation evaporator and the arrears with 500 are ground ml water. The product is treated, dried and restricted abgenutscht, in dichloromethane dissolved, with fullers earth. The arrears crystallize and result in 16.2 g 2-para-Chlorphenyl-4,6-dichlorpyrimidin with melting point 119-120°C. One with 80%, 02 mbar sublimated sample melts with 12D-121C.

Example 6:2 - para Methoxyphenyl-4,6-dihydroxy-pyrimidin



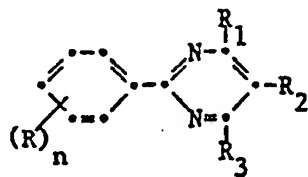
To a suspension of 112 g para Methoxybenzamidin hydrochloride and 101 g Malon acid diäthylester in 520 ml ethanol are given to ethanol-Lösung within 10 minutes of 338 g 30%ige sodiummethylat/} and the whole anschliessend is cooked during 5 hours at the return flow. The reaction mixture is restricted anschliessend at the rotation evaporator and the arrears are solved in 1000 ml 80°C hot water. One filters and acidifies the filtrate to pH 1. The precipitate is dried abfiltriert and in the vacuum with 80°C. One maintains so 109.8 g 2-para Methoxyphenyl-4,6-dihydroxypyrimidin with a melting point from 318°C (decomposition).

Example 7:2 - para Methoxyphenyl-4,6-dichlor-pyrimidin











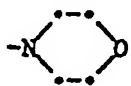

To 54.5 g 2-para-Methoxyphenyl-4,6-dihydroxy-pyrimidin one drips Phosphoroxchlorid (POCl_3) and afterwards 57 ml N, N-Dimethylanilin under Kühöen, so that the reaction temperature does not exceed 45°C , within 30 minutes of 126 ml. The reaction mixture is agitated afterwards during 2 hours with Raumtemperatur and cooked then still 2 hours under return flow. Then at the rotation evaporator and the arrears in 2 l ice/water are restricted are ground. The solid product is solved abgenutscht, in 1,5 l Methylenchlorid, treated and dried with fullers earth. After filtering and restricting the Methylenchlorid-Lösung one maintains arrears, which can be recrystallized from ethanol. One maintains crystalline 2-para-Methoxyphenyl-4,6-dichlor-pyrimidin to so 51 g from the melting point $127-128^\circ\text{C}$.

In similar way for these examples the following compounds are manufactured:



No.	(R) _n	R ₁	R ₂	R ₃	phys. Daten
1	(H) ₅	Cl	H	Cl	Smp. 95-96°
2	4-CH ₃	Cl	H	Cl	Smp. 86-87°
3	4-CH ₃	Cl	CH ₃	Cl	Smp. 153-154°
4	4-CH ₃	Cl		Cl	Smp. 132-133°
5	(H) ₅	Cl	H	CH ₃	Smp. 71-72°
6	4-CH ₃	Cl	H	CH ₃	Smp. 103-104°
7	4-CH ₃	Cl	H	OH	Smp. 229-234°
8	4-CH ₃	Cl	H	OCH ₃	Smp. 92-93°
9	4-CH ₃	Cl	CH ₃	OCH ₃	Smp. 143-144°
10	4-CH ₃	Cl	H	OC ₃ H ₇ iso	Smp. 55-57°
11	4-CH ₃	Cl	H		Smp. 86-87°
12	4-CH ₃	Cl	H		Smp. 102-104°
13	4-CH ₃	Cl	H	NHCH ₃	Smp. 107°
14	4-CH ₃	Cl	Br	NHCH ₃	Smp. 105-107°
15	4-CH ₃	Cl	H	N(C ₂ H ₅) ₂	Smp. 74-75°
16	(H) ₅	CH ₃	H	OH	Oel
17	4-CH ₃	CH ₃	H	OH	Smp. 206-207°
18	(H) ₅	CH ₃	H	OCH ₃	Sdp. 156-8°/ 1.33·10 ³ Pa
19	4-CH ₃	CH ₃	H	OCH ₃	Smp. 66-67°

No.	(R) _n	R ₁	R ₂	R ₃	phys. Daten
20	4-CH ₃	CH ₃	H		Smp. 90-91°
21	(H) ₅	CH ₃	H	OC ₂ H ₄ OCH ₃	Sdp. 158-160°/ 13.33 Pa
22	(H) ₅	CH ₃	H	(OC ₂ H ₄) ₂ OCH ₃	Sdp. 148-150°/ 2.66 Pa
23	4-CH ₃	CH ₃	H	OC ₂ H ₄ OCH ₃	Smp. 61-62°
24	(H) ₅	CH ₃	H	N(CH ₃) ₂	Smp. 55-57°
25	4-CH ₃	CH ₃	H	N(CH ₃) ₂	Smp. 97-98°
26	4-CH ₃	CH ₃	Br	N(CH ₃) ₂	Smp. 49-50°
27	(H) ₅	CH ₃	H		Smp. 88-90°
28	4-CH ₃	CH ₃	H		Smp. 123-124°
29	4-CH ₃	CH ₃	Br		Smp. 113-114°
30	4-CH ₃	OCH ₃	H		Smp. 99-100°
31	4-CH ₃	OCH ₃	H	OCH ₃	Smp. 61-62°
32	4-CH ₃	OCH ₃	CH ₃	OCH ₃	Smp. 93-94°
33	4-CH ₃	OCH ₃		OCH ₃	Smp. 214°
34	4-CH ₃	OC ₂ H ₅	H	OC ₂ H ₅	Smp. 71°
35	4-CH ₃	OC ₃ H ₇ n	H	OC ₃ H ₇ n	Smp. 62°
36	4-CH ₃	OC ₃ H ₇ iso	H	OC ₃ H ₇ iso	Sdp. 123°/5.332 Pa Beispiel 1
37	4-CH ₃	OC ₃ H ₇ iso	Br	OC ₃ H ₇ iso	Smp. 73-74° Beispiel 2
38	4-CH ₃	OC ₄ H ₉ n	H	OC ₄ H ₉ n	Sdp. 158-161°/ 13.332 Pa
39	4-CH ₃		H		Smp. 125-126°




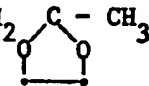
No.	(R) _n	R ₁	R ₂	R ₃	phys. Daten
40	4-CH ₃	SC ₂ H ₅	H	SC ₂ H ₅	Smp. 55-56°
41	4-CH ₃	OC ₂ H ₄ OCH ₃	H	OC ₂ H ₄ OCH ₃	Oel
42	4-CH ₃	OC ₂ H ₄ OCH ₃	CH ₃	OC ₂ H ₄ OCH ₃	Oel
43	4-CH ₃	OC ₂ H ₄ OCH ₃	Cl	OC ₂ H ₄ OCH ₃	Smp. 55-57°
44	4-CH ₃	OC ₂ H ₄ OCH ₃	Br	OC ₂ H ₄ OCH ₃	Smp. 55-56°
45	4-CH ₃	OC ₂ H ₄ OCH ₃	H	NHCH ₃	Smp. 65-66°
46	4-CH ₃	OC ₂ H ₄ OCH ₃	Br	NHCH ₃	Oel
47	4-CH ₃	OC ₂ H ₄ OCH ₃	H	N(C ₂ H ₅) ₂	Oel
48	4-CH ₃		H		Smp. 125-126°
49	4-CH ₃	Br	H	Br	Smp. 125-126°
50	(H) ₅	Br	H	Br	Smp. 115-118°
51	(H) ₅	Cl	H	OH	Smp. 218-221°
52	(H) ₅	Cl	H	SH	Smp. 150° Z
53	4-Cl	Cl	H	Cl	Smp. 120°
54	4-OCH ₃	Cl	H	Cl	Smp. 127-128°
55	4-CN	Cl	H	Cl	Smp. 230-232°
56	3-CF ₃	Cl	H	Cl	Smp. 56-57°
57	2-CH ₃	Cl	H	Cl	Smp. 74-75°
58	2-CH ₃	Cl	Cl	Cl	Smp. 122-125°


No.	(R) _n	R ₁	R ₂	R ₃	phys. Daten
59	3-Cl, 4-F	Cl	H	Cl	Smp. 94-95°
60	2,6(CH ₃) ₂	Cl	H	Cl	Smp. 103-104°
61	3,4(CH ₃) ₂	Br	H	Br	
62	4-C ₃ H ₇ i	Cl	H	Cl	Smp. 63-64°
63	4-C ₃ H ₇ i	Cl	H	F	
64	4-Cl	F	H	F	Smp. 139-141°
65	2-CH ₃ , 6-C ₂ H ₅	Cl	H	Cl	
66	2-CH ₃ , 6-C ₂ H ₅	Cl	H	C ₂ H ₅	
67	2-Cl	Cl	H	Cl	Smp. 116-118°
68	3-C ₂ H ₅	Cl	H	Cl	
69	4-CH ₃	Cl	F	Cl	
70	4-F	Cl	F	Cl	
71	3-CHF ₂	Cl	H	Cl	
72	2,4(CH ₃) ₂	Br	H	Br	
73	2,3,6(CH ₃) ₃	Cl	H	Cl	
74	3-C ₃ H ₇ i	Cl	H	Cl	
75	4-CHF ₂	Cl	H	Cl	
76	2-Cl, 4-CH ₃	Br	H	Br	
77	3,4(Cl) ₂	Cl	H	OH	
78	4-OCH ₂ CH=CH ₂	Cl	H	Cl	Smp. 57-58°
79	4-OH	F	H	F	
80	4-COCH ₃	Cl	H	Cl	Smp. 129-130°
81	4-OCOC ₂ H ₅	Cl	H	Cl	
82	4-OCH(CH ₃)COOCH ₃	Cl	H	Cl	
83	4-OCF ₂ Cl	Cl	H	OC ₂ H ₅	
84	4-OH	Cl	H	Cl	Smp. 135-137°
85	4-OCN(CH ₃) ₂	Cl	H	Cl	Smp. 191-193°
86	3-CH ₂ F	Cl	H	Cl	
87	2-COOCH ₃	Cl	H	OC ₄ H ₉ n	
88	4-CH ₂ F	Cl	H	Cl	
89	4-COOCH ₃	Cl	H	Cl	Smp. 135-140°
90	4-COOC ₄ H ₉ n	Cl	H	OC ₄ H ₉ n	

No.	(R) _n	R ₁	R ₂	R ₃	phys.Daten
91	4-Cl, 2,6(OCH ₃) ₂	Cl	H	Cl	
92	4-CHO	Cl	H	Cl	Smp. 160-162°
93	3-CH ₂ Cl	Cl	H	Cl	
94	3,5(CF ₃) ₂	Cl	H	Cl	
95	4-CF ₃	Br	H	Br	
96	4-OCHF ₂	Cl	H	Cl	
97	3,5(OC ₂ H ₅) ₂	Cl	H	Cl	
98	4-OC ₃ H ₇ i	F	H	F	
99	3-NO ₂	Cl	H	Cl	Smp. 136-138°
100	4-NO ₂	Cl	H	Cl	Smp. 167-168°
101	3-NO ₂ , 4-CH ₃	Cl	H	Cl	
102	2-Cl, 4-NO ₂	Cl	H	Cl	
103	2-N(CH ₃) ₂	Cl	H	Cl	
104	3-NHCOCH ₃	Br	H	Br	
105	3-NHCOCH ₂ Cl	Cl	H	Cl	
106	4-OCF ₃	Cl	H	OC ₃ H ₇ i	
107	3-OCF ₂ Cl, 5-Cl	Cl	H	Cl	
108	2-CON(CH ₃) ₂	Cl	H	Cl	
109	4-OCF ₂ CHF ₂	Cl	H	Cl	
110	4-CONHC ₄ H ₉ n	Cl	H	Cl	
111	4-NHCOCH ₂ Cl	Cl	H	Cl	Smp. 196-198°
112	4-COCH ₃ , 3-CH ₃	Cl	H	CH ₃	
113	3-CH ₂ -COCH ₃	F	H	OCH ₃	
114	4-COC ₃ H ₇ n	Cl	H	Cl	
115	4-OCF ₂ CHFC1	Cl	H	Cl	
116	2-OH	Cl	H	Cl	
117	4-COOCH ₂ CH=CH ₂	Cl	H	Cl	
118	4-COOCH ₂ C≡CH	Cl	H	Cl	Smp. 105-109°
119	2-Cl, 6-C≡CH	Cl	H	Cl	
120	3-C≡C-C(CH ₃) ₂ OCH ₃	Br	H	Br	
121	4-C≡C-C(CH ₃) ₂ OH	Cl	H	Cl	






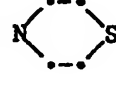
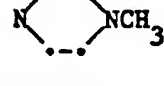
No.	(R) _n	R ₁	R ₂	R ₃	phys.Daten
122	4-C≡C-C(CH ₃) ₂ OCH ₃	Cl	H	Cl	
123	3,5(I) ₂ , 4-OCH(CH ₃)COOCH ₃	Cl	H	Cl	
124	(H) ₅	Cl	CF ₃	Cl	
125	4-CH=CH-C ₄ H ₉ n	Cl	H	Cl	
126	4Cl ₃	Cl	CF ₃	Cl	
127	4-OH	Br	H	Br	
128	4-Br	Cl	H	Cl	Smp. 130-131°
129	3-OH	Cl	H	Cl	Smp. 144-146°
130	3-OCH ₃	Cl	H	Cl	Smp. 97-100°
131	3-OCOCH ₂ Cl	Cl	H	Cl	
132	2-OCH ₃	Cl	H	Cl	Smp. 67-70°
133	2,6(F) ₂	Cl	H	Cl	
134	4-F	Cl	H	Cl	Smp. 102-105°
135	3-Cl, 4-CH ₃	Cl	H	Cl	Smp. 91-92°
136	(H) ₅	F	H	F	Smp. 114-116°
137	(H) ₅	F	H	Cl	Smp. 105°
138	2,5(Cl) ₂ , 4-OH	F	H	F	
139	2-Cl, 4-OCH(CH ₃)COOC ₂ H ₅	Cl	H	Cl	
140	2,3,5(Cl) ₃ , 4-OH	Cl	H	Cl	
141	2,3,5(Cl) ₃ , 4-OC ₂ H ₅	Cl	H	Cl	
142	2,3,5,6(CH ₃) ₄ , 4-NO ₂	Cl	H	Cl	
143	(H) ₅	F	CF ₃	Cl	
144	3-SO ₂ N(CH ₃) ₂	Cl	H	Cl	
145	4-CSN(CH ₃) ₂	Cl	H	Cl	
146	4-C(CH ₃)=CH ₂	Cl	H	Cl	
147	4-CH ₂ COOCH ₃	Cl	H	Cl	
148	4-CH ₂ PO(OC ₂ H ₅) ₂	Cl	H	Cl	Smp. 110-112°
149	4-CH ₂ PO(OH) ₂	Br	H	Br	
150	4-SO ₂ N(CH ₃) ₂ , 5-CH ₃	Cl	H	OC ₄ H ₉ n	
151	4-PO(OH) ₂	Br	H	Br	
152	4-PO(OCH ₃) ₂	Cl	H	Cl	
153	3-PO(OCH ₃) ₂	Cl	H	Cl	




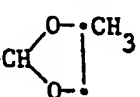
No.	(R) _n	R ₁	R ₂	R ₃	phys.Daten
154	H	SOCH ₃	H	Cl	
155	4-CH ₂ CH=CH ₂	Cl	H	Cl	
156	3-C≡CH, 5-CH ₃	Cl	H	Cl	
157	2-C≡CH	Cl	H	Cl	
158	4-C≡CH	Cl	H	Cl	Smp. 168-170°
159	H	SOCH ₃	H	Br	
160	4-C(OCH ₃) ₂ C ₃ H ₇ n	Cl	H	OCH ₃	
161	2-CH ₃ , 5-N(CH ₃) ₂	Cl	H	Cl	
162	2-CH ₃ , 5-Cl	Cl	H	Cl	
163	3-Br, 4-OH	Cl	H	OCH ₂ CH=CH ₂	
164	3-Br, 4-OC ₃ H ₇ n	Cl	H	Cl	
165	3-NO ₂ , 4-Cl	Cl	H	Cl	Smp. 158-159°
166	3-NH ₂ , 4-Cl	Cl	H	Cl	
167	3-CH ₃ , 4-NO ₂	Cl	H	Cl	Smp. 173-175°
168	3-CH ₃ , 4-NH ₂	Cl	H	Cl	fest
169	3-CH ₃ , 4-NHCON(CH ₃) ₂	F	H	OCH ₂ CH=CH ₂	
170	2-Cl, 5-CF ₃	Cl	H	Cl	
171	3-CF ₃ , 4-Cl	Cl	H	Cl	
172	4-CH ₃	SOCH ₃	H	Cl	
173	2-Cl, 5-N(CH ₃) ₂	Cl	H	OH	
174	2,6(OCH ₃) ₂ , 3-NO ₂	Cl	H	Cl	
175	2,6(OCH ₃) ₂ , 3-NH ₂	Cl	H	Cl	
176	2,6(OCH ₃) ₂ , 3-NHCOCH ₃	Cl	H	Cl	
177	2-CH ₃ , 6-C ₂ H ₅ , 4-OCON(CH ₃) ₂	Cl	H	Cl	
178	3,5(I) ₂ , 4-OH	Cl	H	Cl	
179	3,5(I) ₂ , 4-OCH ₃	Br	H	Br	
180	3,5(Br) ₂ , 4-OH	Cl	H	Cl	
181	3,5(Br) ₂ , 4-OCH ₂ -CH=CH ₂	Cl	H	Cl	
182	3,4,5(OCH ₃) ₃	Cl	H	Cl	Smp. 167-169°
183	2,3(Cl) ₂	Cl	H	Cl	Smp. 116-118°

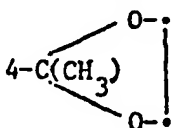
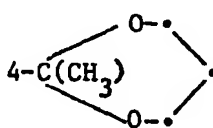
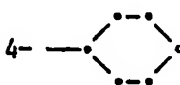
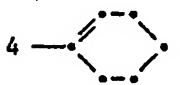
No.	(R) _n	R ₁	R ₂	R ₃	phys. Daten
184	4-CH ₃	F	H	SOCH ₃	
185	(H) ₅	SOCH ₃	H	CN	
186	(H) ₅	SCH ₃	H	CN	
187	(H) ₅	SO ₂ CH ₃	H	CN	
188	(H) ₅	-O-CO-CH ₃	H	Cl	
189	4-CH ₃	CN	Cl	Cl	
190	3-SO ₂ NHCOONC ₃ H ₇ (i)	Cl	H	Cl	
191	4- 	Cl	H	Cl	
192	3- 	Br	H	Br	
193	3- 	Cl	H	Cl	
194	3-CH ₂ -  -CH ₃	F	H	OCH ₃	
195	3-CF ₃	OH	H	OH	Smp. 286°C
196	4-CH ₃	OCH ₃	H	OH	
197	3-NH ₂	Cl	H	Cl	fest
198	4-NH ₂	Cl	H	Cl	fest
199	3-NHCOCH ₃	Cl	H	Cl	Smp. 228-230°
200	4-NHCOCH ₃	Cl	H	Cl	Smp. 190-192°
201	4-SO ₂ NHCOOCH ₃	Cl	H	Cl	
202	3-SO ₂ NCH ₃ COOCH ₃	Cl	H	Cl	
203	4-CH ₃ ·3-SO ₂ H	Cl	H	Cl	
204	4-CH ₃ ·3-SO ₂ NH ₂	Cl	H	Cl	
205	4-NHCONHC ₂ H ₅	Cl	H	Cl	
206	4-Cl, 3-NH ₂	Cl	H	Br	
207	3-I	Cl	H	Cl	
208	3-COOH	Cl	H	Cl	Smp. 250°


No.	(R) _n	R ₁	R ₂	R ₃	phys. Daten
209	4-COOH	Cl	H	Cl	Smp. 236-238°
210	3-CH ₃	Cl	H	OH	Smp. 195-200°
211	4-N(CH ₃) ₂	Cl	H	Cl	Smp. 150-155°
212	3NHCH ₃	Cl	H	Cl	
213	HNHCH ₃				
214	3-NHCHO				
215	4-NHCHO				
216	3-NHCO 	Cl	H	Cl	
217	4-OCH ₂ OCH ₃	Cl	H	Cl	
218	4-SCH ₃	Cl	H	F	
219	3-SH	Cl	H	Cl	
220	4-SCH ₃	Cl	H	Cl	Smp. 109-111°
221	4-OCOOCH ₃	Cl	H	F	
222	3-OCOOCH ₃	Cl	H	Cl	
223	3-F	Cl	H	Cl	Smp. 72-74°
224	4-OC ₂ H ₄ OC ₂ H ₅	Cl	H	Cl	Smp. 75-77°
225	4-OC ₂ H ₄ OC ₃ H ₇ ⁿ	Cl	H	Cl	Wachs
226	4-CH ₂ -CCl=CH ₂	CH ₃	H	Cl	
227	4-SO ₂ CH ₃	Cl	H	Cl	Smp. 163-165°
228	4-OC ₂ H ₄ OC ₂ H ₄ OC ₂ H ₅	Cl	H	Cl	Smp. 42-43°
229	4-OCH ₃	Br	H	Br	Smp. 129-131°
230	-OC ₆ H ₁₃ ⁿ	Cl	H	Cl	
231	4-OCH ₂ -C=CH	Cl	H	Cl	
232	4-OC ₂ H ₄ N(C ₂ H ₅) ₂	Cl	H	Cl	
233	4-OC ₂ H ₄ Cl	Cl	H	Cl	
234	4-OC ₂ H ₄ OH	Cl	H	Cl	
235	4-OC ₂ H ₄ SCH ₃	Cl	H	Cl	
236	4-OC ₂ H ₄ OC ₂ H ₄ Cl	Cl	H	Cl	Smp. 88-89°
237	4-OCF ₃	Cl	H	Cl	
238	4-OC ₂ H ₅	Cl	H	Cl	
239	4-OCOCH ₃	Cl	H	Cl	Smp. 113-115°
240	4-OCH(CH ₃)COOCH ₃	Cl	H	Cl	



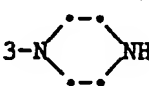
No.	(R) _n	R ₁	R ₂	R ₃	phys. Daten
241	4-OCH(CH ₃)COOCH ₃	Br	H	Cl	Smp. 118-120°
242	4-OCOCH=CH ₂	Cl	H	Cl	
243	4-OCOC ₃ H ₆ CH=CH ₂	Cl	H	Cl	
244	4-OCH ₂ CON(CH ₃) ₂	Cl	H	Cl	
245	4-OCH ₂ CH=CHCH ₃	Cl	H	Cl	
246	4-OC ₂ H ₄ CH=CClCH ₃	Cl	H	Cl	
247	(H) ₅	Cl	CHF ₂	Cl	
248	(H) ₅	Cl	H	F	
249	(H) ₅	Cl	H	Br	
250	(H) ₅	J	H	J	
251	4-SOCH ₃	Cl	H	Cl	
252	4-SC ₂ H ₄ N(CH ₃) ₂	Cl	H	Cl	
253	4-SC ₂ H ₄ OCH ₃	Cl	H	Cl	
254	4-SC ₆ H ₁₃ n	Cl	H	Cl	
255	4-SC ₂ H ₄ COOC ₄ H ₉	Cl	H	Cl	
256	4-SCOCH ₃	Cl	H	Cl	
257	4-SCH ₂ CH=CH ₂	Cl	H	Cl	
258	4-NH ₂	Br	H	Br	
259	4-NHC ₆ H ₁₃ n	Cl	H	Cl	
260	4-NHC ₃ H ₇ i	Cl	H	Cl	
261	4-NHCH ₂ COOCH ₃	Cl	H	Br	
262	4-NHCH(CH ₃)CON(CH ₃) ₂	Cl	H	Cl	
263	4-NHCOCH=CH ₂	Cl	H	Cl	
264	4-NHCH ₂ -CH=CH ₂	Cl	H	Cl	
265	4-N(CH ₂ -CH=CH ₂) ₂	Cl	H	Cl	
266	4-NHCH-C≡CH	Cl	H	Cl	
267	4-NHCH ₂ CH=CHC ₂ H ₅	Cl	H	Cl	
268	4-NH(CH ₂) ₄ C≡CH	Cl	H	Cl	
269	4-NHOCH ₃	Cl	H	Cl	
270	4-NHOCH ₂ CH=CH ₂	Cl	H	Cl	
271	4-N(CH ₃)OCH ₃	Cl	H	Cl	






No.	(R) _n	R ₁	R ₂	R ₃
272	4-N(CH ₃)COCH ₃	Cl	H	Cl
273	4-B(OCH ₃)COCH ₃	Cl	H	Cl
274	4-NH - 	Cl	H	Cl
275	4-NH - 	Cl	H	Cl
276	4-N - 	Cl	H	Cl
277	4-N - 	Cl	H	Cl
278	4-N - 	Br	H	Br
279	4-N - 	Cl	H	Cl
280	4-N - 	Cl	H	F
281	4-NHCOOCH ₃	Cl	H	Cl
282	4-N(CH ₃)COOC ₃ H _{7i}	Cl	H	Cl
283	4-NHCONHCH ₃	Cl	H	Cl
284	4-NHCON(CH ₃) ₂	Cl	H	Cl
285	4-N(CH ₃)CONHCH ₃	Cl	H	Cl
286	4-N(CH ₃)CON(CH ₃)OCH ₃	Cl	H	Cl
287	COOC ₆ H ₁₃ ⁿ	Cl	H	Cl
288	4-OCOCH ₂ CH=CHCH ₃	Cl	H	Cl
289	4-CONH ₂	Cl	H	Cl
290	4-CON(C ₃ H ₇ ⁿ) ₂	Cl	H	Cl
291	4-CONHC ₆ H ₁₃ ⁿ	Cl	H	Cl
292	4-OCOC ₂ H ₄ N(C ₂ H ₅) ₂	Br	H	Br

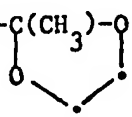


No.	(R) _n	R ₁	R ₂	R ₃
293	4-CONHOCH ₃	Cl	H	Cl
294	4-CON(CH ₃) ₂	Cl	H	Cl
295	4-CHO	Br	H	Br
296	4-COC ₄ H ₉ ⁿ	Cl	H	Cl
297	4-COCH=CH-N(CH ₃) ₂	Cl	H	Cl
298	4-CSN(C ₃ H ₇) ₂	Cl	H	Cl
299	4-CSNHC ₆ H ₁₃ ⁿ	Cl	H	Cl
300	4-N=CHC ₃ H ₇ ⁱ	Cl	H	Cl
301	4-N=CHC ₆ H ₁₃ ⁿ	Cl	H	Cl
302	4-N=CH(CH ₃) ₂	Cl	H	Cl
303	4- N= 	Cl	H	Cl
304	4-N(CH ₃)CH ₂ OCH ₃	Cl	H	Cl
305	4-SO ₂ NH ₂	Cl	H	Cl
306	4-SO ₂ N(CH ₃) ₂	Cl	H	Cl
307	4-SO ₂ NHC ₄ H ₉	Cl	H	Cl
308	3-SO ₂ N 	Br	H	Br
309	4-SO ₂ NHCH ₂ CH=CH ₂	Cl	H	Cl
310	4-CH(OCH ₃) ₂	Cl	H	Cl
311	4-CH(OC ₂ H ₄ OCH ₃) ₂	Cl	H	F
312	4-C(C ₄ H ₉ ⁿ)(OC ₂ H ₅) ₂	Cl	H	Cl
313	4-C(CH ₃)(OCH ₃) ₂	Cl	H	Cl
314	4-C(CH ₃)(OC ₂ H ₄ SCH ₃) ₂	Cl	H	Cl
315	4-CH 	Cl	H	Cl
316	4-CH 	Cl	H	Cl

No.	(R) _n	R ₁	R ₂	R ₃	phys. Daten
317		Cl	H	Cl	
318		Cl	H	Cl	
319	4-PO(OH)OC ₂ H ₅	Cl	H	Cl	
320	4-SO ₃ H	Cl	H	Cl	
321	4-CF ₃	Cl	H	Cl	
322	4-CH ₂ Br	Cl	H	Cl	Smp. 155-156°
323	4-CH ₂ Cl	Cl	H	Cl	
324	4-CH ₂ OCH ₃	Cl	H	Cl	
325	4-CH ₂ OH	Cl	H	Cl	
326	4-CH ₂ OCOCH ₃	Cl	H	Cl	Smp. 108-110°
327	4-CH ₂ OC ₄ H ₉ ⁿ	Cl	H	Cl	
328	4-CH ₂ SCH ₃	Cl	H	Cl	
329	4-CH ₂ N(CH ₃) ₂	Cl	H	Cl	
330	4-CHClCH ₃	Cl	H	F	
331	4-C ₂ H ₅	Cl	H	Cl	
332	4-C ₆ H ₁₃ ⁿ	Cl	H	Cl	
333	4-C ₅ H ₁₁ ^{iso}	Br	H	Br	
334	4-C=CCH ₃	Cl	H	Cl	
335	4-CH=CH ₂	Cl	H	Cl	
336	4-CH ₂ -CH=CH ₂	Cl	H	F	
337	4-CCl=CH ₂	Cl	H	Cl	Smp. 128-130°
338	4-C ₂ H ₄ Cl	Cl	H	Cl	
339	4-C ₂ H ₄ N(C ₂ H ₅) ₂	Cl	H	Cl	
340		Cl	H	Cl	
341		Cl	H	Cl	

No.	(R) _n	R ₁	R ₂	R ₃	phys. Daten
342	4- 	Cl	H	Cl	
343	4-CH=CH ₂ -CH ₂ OCH ₃	Cl	H	Cl	
344	4-N(CH ₃)COCH ₂ Cl	Cl	H	Cl	
345	4-CH ₂ CN	Cl	H	Cl	Smp. 151-158°
346	3-F	Br	H	Br	
347	3-Cl	Cl	H	Cl	Smp. 117-119°
348	3-NO ₂	Br	H	Br	Smp. 165-167°
349	3-NO ₂	F	H	F	
350	3-OC ₃ H ₇ i	Cl	H	Cl	
351	3-OCH ₂ CH=CHCH ₃	Cl	H	F	
352	3-OCH ₂ C=CH	Cl	H	Cl	
353	3-OC ₂ H ₄ N(C ₂ H ₅) ₂	Cl	H	Cl	
354	3-OCH(CH ₃)CH ₂ N(C ₂ H ₅)	Cl	H	Cl	
355	3-OC ₂ H ₄ Cl	Cl	H	Cl	
356	4-CH ₃	Br	H	Cl	
357	3-OC ₂ H ₄ SC ₂ H ₅	Cl	H	Cl	
358	3-OC ₂ H ₄ OC ₃ H ₇ n	Cl	H	Cl	
359	3-OCF ₃	Cl	H	F	
360	3-OCHF ₂	Cl	H	Cl	
361	3-OCF ₂ CHF ₂	Cl	H	Cl	
362	3-OCF ₂ CHFC1	Br	H	Br	
363	3-OCOC ₂ H ₅	Cl	H	Cl	
364	3-OCOCH ₂ Cl	Br	H	Br	
365	3-SC ₂ H ₅	Cl	H	Cl	
366	3-SCF ₃	Cl	H	Cl	
367	3-SCHF ₂	Cl	H	Cl	
368	3-SO ₂ CH ₃	Cl	H	Cl	
369	3-SC ₃ H ₆ N(CH ₃) ₂	Cl	H	Cl	
370	3-SC ₃ H ₆ Cl	Cl	H	Cl	
371	3-SC ₅ H ₁₁ iso	Cl	H	Cl	

No.	(R) _n	R ₁	R ₂	R ₃	phys. Daten
372	3-SCH ₂ COOC ₃ H _{7n}	Cl	H	F	
373	3-S-CH ₂ -C=CH	Cl	H	Cl	
374	3-NH ₂	Br	H	Br	fest
375	3-N(CH ₃) ₂	Cl	H	Cl	
376	3-NHC ₄ H _{9n}	Cl	H	Cl	
377	3-NHC ₄ H ₉ sek	Cl	H	Cl	
378	3-N(CH ₂ C=CH) ₂	Cl	H	F	
379	3-NHCH ₂ CH=CH ₂	Cl	H	Cl	
380	3-N(CH ₃)COCH ₂ Cl	Cl	H	Cl	
381	3-SO ₂ NHCO ₂ CH ₃				Smp. 160-161°
382	3-NHCOCH=CH-CH ₃	Cl	H	Cl	
383	3-NHOH	Br	H	Br	
384	3-NHOC ₂ H ₅	Cl	H	Br	
385	3-NCH ₃ OCH ₃	Cl	H	Cl	
386	3-N(C ₃ H ₇ iso)CO ₂ C ₂ H ₅	Cl	H	Cl	
387	3-N 	Cl	H	Cl	
388	3-N 	Cl	H	Cl	
389	3-NHCOOC ₄ H ₉ iso	Cl	H	Cl	
390	3-NHCONHC ₄ H _{9n}	Cl	H	Cl	
391	3-N 	Br	H	Br	
392	3-N(CH ₃)CON(CH ₃) ₂	Cl	H	Cl	
393	3-COOH	Cl	H	Cl	Smp. 250°C
394	3-COOCH ₃	Cl	H	Cl	Smp. 190-191°
395	3-COOCH ₂ CH=CH ₂	Cl	H	Cl	Smp. 120-121°
396	3-COOC ₃ H _{7i}	Cl	H	Cl	
397	3-COCH ₂ -C≡C-C ₃ H _{7n}	Cl	H	Cl	
398	3-CONH ₂	Cl	H	Cl	

No.	(R) _n	R ₁	R ₂	R ₃	phys. Daten
399	3-CONHOH	Cl	H	Cl	
400	3-CON(CH ₃) ₂	Cl	H	Cl	
401	3-CONHCH ₃	Br	H	Br	
402	3-CONHCH ₂ CH=CH ₂	Cl	H	F	
403	3-COOC ₃ H ₆ N(CH ₃) ₂	Cl	H	Cl	
404	3-CHO	Cl	H	Cl	
405	3-COCH ₃	Cl	H	Cl	
406	3-CO- 	Cl	H	Cl	
407	3-CSNHC ₄ H ₉ n	Cl	H	Cl	
408	3-CSNHC ₃ H ₇ iso	Cl	H	Cl	
409	3-CSN 	Cl	H	Cl	
410	3-N=CHC ₃ H ₇ (i)	Cl	H	Cl	
411	3-N=C(CH ₃)CH ₂ OCH ₃	Cl	H	Cl	
412	3-N=CHC ₂ H ₄ OC ₂ H ₅	Cl	H	Cl	
413	3-N=C 	Cl	H	Cl	
414	3-SO ₂ NH ₂	Cl	H	Cl	Smp. 207-208°
415	3-SO ₂ NHCH ₃	Cl	H	Cl	Smp. 174-175°
416	3-SO ₂ N(C ₄ H ₉ n) ₂	Cl	H	Cl	
417	3-SO ₂ N 	Cl	H	Cl	
418	3-SO ₂ N(CH ₃) ₂	Cl	H	Cl	Smp. 144-145°
419	3-CH(OC ₂ H ₅) ₂	Cl	H	Cl	
420	3-C(CH ₃)(OCH ₃) ₂	Cl	H	Cl	
421	3-C(CH ₃)(OC ₂ H ₄ OCH ₃) ₂	Cl	H	Cl	
422	3-CH 	Cl	H	Cl	







No.	(R) _n	R ₁	R ₂	R ₃	phys. Daten
423	3-C(CH ₃) ₂ -O 	Cl	H	Cl	
424	3-PO(OC ₂ H ₅) ₂	Cl	H	Cl	
425	3-P(OH) ₂	Cl	H	Cl	
426	3-P(OH)OCH ₃	Cl	H	Cl	
427	3-SO ₃ H	Cl	H	Cl	Smp. 95-96°
428	3-CF ₃	Cl	H	F	
429	3-CH ₂ CN	Cl	H	Cl	
430	3-CH ₂ Cl	Cl	H	Cl	
431	3-CH ₂ OC ₂ H ₅	Cl	H	Cl	
432	3-CH ₂ OH	Br	H	Br	
433	3-C ₂ H ₄ SCH ₃	Cl	H	Cl	
434	3-C ₂ H ₄ SOCH ₃	Cl	H	Cl	
435	3-CHCl-C ₂ H ₅	Cl	H	F	
436	3-C ₃ H ₇ ⁿ	Cl	H	Cl	
437	3-C ₆ H ₁₃ ^{iso}	Cl	H	Cl	
438	3-C≡CH	Cl	H	Cl	
439	3-C≡CCH ₃	Cl	H	Cl	
440	3-CH=CH ₂	Cl	H	Cl	
441	3-CCl=CH ₂	Cl	H	Cl	Smp. 68-72°
442	3-CCl=CHCH ₃	Cl	H	Cl	
443	3-C ₂ H ₄ N(CH ₃) ₂	Cl	H	Cl	
444	3- 	Cl	H	Cl	
445	3-CH=CH-C ₃ H ₇ ⁿ	Cl	H	Cl	
446	3- 	Cl	H	Cl	
447	3-CH ₂ COOC ₂ H ₅	Cl	H	Cl	
448	3-CH ₂ CONH ₂	Br	H	Br	
449	2-CH ₃	Br	H	Br	

No.	(R) _n	R ₁	R ₂	R ₃	phys. Daten
450	2-F	Cl	H	Cl	
451	2-OCH ₂ C=CH	Cl	H	Cl	
452	2-SCH ₃	Cl	H	Cl	
453	2-SH	Cl	H	Cl	
454	2-COOH	Cl	H	Cl	
455	2-COOCH ₃	Cl	H	Cl	
456	2-CH ₂ OH	Br	H	Br	
457	2-CHO	Cl	H	Cl	
458	3-Cl, 4F	F	H	F	Smp. 101-103°
459	3-Cl, 4F	F	H	Cl	
460	3,4(CH ₃) ₂	Cl	H	Cl	
461	3,5(Cl) ₂	Cl	H	Cl	Smp. 175-177°
462	2,6(Cl) ₂	Cl	H	Cl	
463	2,3(CH ₃) ₂	Cl	H	Cl	
464	2,4(CH ₃) ₂	Cl	H	Cl	
465	3-Cl, 4-C ₃ H ₇ iso	Cl	H	Cl	
466	2-Cl, 4-CH ₃	Cl	H	Cl	
467	3,4(Cl) ₂	Cl	H	Cl	
468	3,5(OCH ₃) ₂	Cl	H	Cl	Smp. 168-172°
469	3-NH ₂ , 4-CH ₃	Cl	H	Cl	
470	3-NHCH ₃ , 4-CH ₃	Cl	H	Cl	
471	3-OH, 5-Cl	Cl	H	Cl	
472	3-OCHF ₂ , 5-Cl	Cl	H	Cl	
473	3-OCH ₃ , 5-Cl	Cl	H	Cl	
474	3-COOH, 5-Cl	Cl	H	Cl	
475	3-COOCH ₃ , 5-Cl	Cl	H	Cl	
476	3-CONH ₂ , 5-Cl	Cl	H	Cl	
477	4-COCH ₃ , 4-CH ₃	Cl	H	Cl	
478	2-Cl, 6-C=CH	Br	H	Br	
479	4-SO ₂ N(CH ₃) ₂ , 5-CH ₃	Br	H	Br	
480	3-C=CH, 5CH ₃	Cl	H	F	

No.	(R) _n	R ₁	R ₂	R ₃	phys. Daten
481	2-CH ₃ , 5-N(CH ₃) ₂	Cl	H	Cl	
482	2-CH ₃ , 5-Cl	Cl	H	Cl	
483	3-Br, 4-OCH ₃	Cl	H	Cl	
484	3-CH ₃ , 4-NHCON(CH ₃) ₂	Cl	H	Cl	
485	2 SCH ₃ , 5-NO ₂	Cl	H	Cl	
486	2 SCH ₃ , 5-NH ₂	Cl	H	Cl	
487	2 Cl, 5-NO ₂	Cl	H	Cl	
488	2 Cl, 5NH ₂	Cl	H	Cl	
489	3,4(OCH ₃) ₂	Cl	H	Cl	
490	3,4 (OH) ₂	Cl	H	Cl	
491	2,3 • Cl ₂	Cl	H	Cl	Smp. 116-118°
492	2,5 (OCH ₃) ₂	Cl	H	Cl	Smp. 127-129°
493	2,5 (OH) ₂	Cl	H	Br	
494	4-CN ₃ , 3-CH ₃	Cl	H	Cl	Smp. 120-123°
495	4-OH, 3-CH ₃	Cl	H	Br	
496	4-OCH ₃ , 3-NO ₂	Cl	H	Cl	
497	4-OH, 3-NO ₂	Cl	H	Cl	
498	4-OCH ₃ , 3-NH ₂	Cl	H	Cl	
499	4-OH, 3-NH ₂	Cl	H	Cl	
500	3,5 (OH) ₂	Cl	H	Cl	
501	2,6 Cl ₂ , 3-NO ₂	Cl	H	Cl	
502	2,6 Cl ₂ , 3-NH ₂	Cl	H	Cl	
503	2,6(OCH ₃) ₂ , 4-Cl	Br	H	Br	
504	2,6(OH) ₂ , 4-Cl	Br	H	Br	
505	3,5(J) ₂ , 4-OCH ₃	Cl	H	Cl	
506	3,5(J) ₂ , 4-OH	Br	H	Br	
507	3,5(Cl) ₂ , 4-OCH ₃	Br	H	Br	
508	3,5(Cl) ₂ , 4-OH	Cl	H	Cl	
509	2,5(Cl ₂), 4-OCH ₃	Cl	H	Cl	
510	2,5(Cl) ₂ , 4-OH	Cl	H	Cl	
511	4F	Cl	H	Br	
512	3,4(OH) ₂	Br	H	Br	

No.	(R) _n	R ₁	R ₂	R ₃	phys. Daten
513	2,6(OH) ₂ , 3-NH ₂	Cl	H	Cl	
514	3-OCH ₂ OCH ₃	Cl	H	Cl	
515	3,5(OH) ₂ , 4-OCH ₃	Cl	H	Cl	
516	3,4,5(OH) ₃	Cl	H	Cl	
517	2,3,4(OCH ₃) ₃	Cl	H	Cl	
518	2,3,4(OH) ₃	Cl	H	Cl	
519	2,3,5(Cl) ₃ , 4-OCH ₃	Cl	H	Cl	
520	(CH ₃) ₅	Cl	H	Cl	
521	H	CN	H	CN	Smp. 150-155°
522	H	Cl	H	CN	
523	4-CH ₃	CN	H	CN	
524	4-CH ₃	Cl	H	CN	
525	4-OCH ₃	CN	H	CN	
526	4-OCH	CN	H	Cl	
527	4-OH	CN	H	CN	
528	4-OH	Cl	H	CN	Smp. 69-72°
529	(H) ₅	SCH ₃	H	Cl	
530	(H) ₅	SO ₂ CH ₃	H	Cl	
531	(H) ₅	SCH ₃	H	Br	
532	(H) ₅	SO ₂ CH ₃	H	Br	
533	(H) ₅	SCH ₃	H	F	
534	(H) ₅	SO ₂ CH ₃	H	F	
535	(H) ₅	CN	Cl	Cl	
536	3-SCH ₂ CO ₂ CH ₃	Cl	H	Cl	
537	(H) ₅	OCF ₃	H	Cl	
538	4-CH ₃	OCF ₃	H	Cl	
539	4-CH ₃	OCOCH ₃	H	Cl	Smp. 110-112°
540	4-OH, 3CH ₃	Cl	H	Cl	
541	(H) ₅	Cl	F	Cl	
542	(H) ₅	Br	F	Br	
543	3-CH ₃	Cl	H	Cl	Smp. 76-79°
544	3-SCH ₃	Cl	H	Cl	Smp. 103-105°

No.	(R) _n	R ₁	R ₂	R ₃	phys. Daten
545	3-CCl ₃	Cl	H	Cl	
546	4-CCl ₃	Cl	H	Cl	
547	4-OH, 3-CH ₃	Br	H	Cl	Smp. 140-145°
548	4-SCH ₂ COCH ₃	Cl	H	Cl	
549	3-SCOH=CH ₂	Cl	H	Cl	
550	4-SCOH=CHCH ₃	Cl	H	Cl	
551	3-SCO-CH ₂ C≡CH	Br	H	Br	
552	4-SOCH ₂ CH=CH ₂	Cl	H	Cl	
553	3-SOCH ₂ CH=CH ₂	Cl	H	Cl	
554	4-SOCH ₂ C≡CH	F	H	Cl	
555	3-SOCH ₂ C≡CH	Cl	H	Cl	
556	3-SO ₂ CH ₂ CH=CH ₂	Br	H	Br	
557	4-SO ₂ CH ₂ CH=CH ₂	Cl	H	Cl	
558	3-SO ₂ CH ₂ C≡CH	Cl	H	Cl	
559	4-SO ₂ CH ₂ C≡CH	Cl	H	Cl	
560	4-OCOC ₆ H _{13n}	Cl	H	Cl	
561	3-OCO-C ₅ H _{11i}	Cl	H	Cl	
562	4-CONHCH ₃	Cl	H	Cl	Smp. 205-209°
563	3-CONHCH ₃	Cl	H	Cl	Smp. 134-137°
564	4-CON(CH ₃) ₂	Cl	H	Cl	Smp. 191-193°
565	4-CONHC ₄ H ₉	Cl	H	Cl	
566	3-CONHC ₃ H _{7i}	Cl	H	Cl	
567	4-OCOCH=CH ₂	Cl	H	Cl	
568	3-OCOCH=CH-CH ₃	Cl	H	Cl	
569	4-OCOCH ₂ OCH ₃	Cl	H	Cl	
570	3-CON(CH ₃) ₂	Cl	H	Cl	
571	4-NHCONHC ₄ H _{9n}	Cl	H	Cl	
572	4-SH	Cl	H	Cl	
573	3-OC ₂ H ₄ OH	Cl	H	Cl	
574	3-NHC ₂ H ₄ COOCH ₃	Cl	H	Cl	
575	3-Br, 4-OH	Cl	H	Cl	
576	3-NHCONHCH ₃	Cl	H	Cl	Smp. 234-238°
577	4-OCH ₃	OH	H	OH	Smp. 318° Z

No.	(R) _n	R ₁	R ₂	R ₃	
577	4-Br	Cl	H	CH ₃	Smp. 143-146°
578	4-CH ₃	CH ₃	H	CH ₃	Smp. 138-139°
579	4-CH ₃	OH	H	OH	Smp. 311° Z
580	4-CH ₃	OH	H	SO ₃ CH ₃	Smp. 96-99°
581	4-OCH ₂ CH=CH ₂	OH	H	OH	Smp. 280° Z
582	4-F	OH	H	OH	Smp. 330° Z
583	3-OH	OH	H	OH	Smp. 320° Z
584	4-O- 	OH	H	OH	Smp. 250° Z
585	3,4-OCH ₂ O-	Cl	H	Cl	Smp. 148-150°
586	4-OC ₃ H ₆ O- 	Cl	H	Cl	Smp. 102-103°
587	3-O- 	Cl	H	Cl	Smp. 91-93°
588	(H) ₅	OH	H	CH ₂ Cl	Smp. 193-195°
589	-N(C ₂ H ₄ OH) ₂	Cl	H	Cl	Smp. 169-171°
590	- 	Cl	H	-ON=C(-CH ₃) ₂	Smp. 120-121°
591	3-COCH ₃	OH	H	OH	Smp. 230° Z
592	3,4 Cl ₂ 5-P(OCH ₃) ₂	Cl	H	Cl	Smp. 220° Z
593	-OCON(CH ₃)OCH ₃	Cl	H	Br	Smp. 170-172°
594	-N=CH- 	Cl	H	Cl	Smp. 152-154°
595	-OCONH-  -Cl	Cl	H	Cl	Smp. 195-198°

The compounds of the formula I are not used generally as such in the agriculture. One uses ready for use formulated means, in which the active compounds are present mixed with carrier materials, wetting agents and other auxiliary materials usual in the formulation technology, so that they can be used either directly or with water diluted. The production of wolcher means can be taken for example from the following examples.

Example 8: Types of dust means

For the production of an a) 5% and b) 2%igen of types of dust means the following materials are used:

a) 5 parts of 2-para-Tolyl-4,6-bis-isopropoxy-pyrimidin
95 parts talcum powder,

b) 2 parts of the above active substance or a mixture,
1 part high disperse silicic acid,
97 parts talcum powder.

The active substances will grind mixed with the carrier materials and and will be able in this form application to become dusty.

Example 9: Granulates

For the production of a 5% Granulates the following materials are used:

5 parts of 2-para-Tolyl-4,6-bis-isopropoxy-5-bro-pyrimidin
0,25 parts epoxidized vegetable oil,
0,25 parts of Cetylpolglycolether,
3,50 parts PL glycol,
91 parts kaolin (grain size 0.3-0.8 mm).

The active ingredient or the mixture is mixed with the vegetable oil and added with 6 parts acetone dissolved, on that PL glycol and Cetylpolglycolether. The so resulting solution is up-sprayed on kaolin, and afterwards the acetone in the vacuum one evaporates. Such micro granulates can be trained favourably in seed furrows.

Example 10: Wettable powder

To the production of an a) 70%igen, b) 40%igen, c) and d) 25%igen,
e) 10%igen of sprayable powders are used the following constituents:

a) of 70 parts of 2-para-Tolyl-4,6-bis (methoxyäthyl) - 5-chlorpyrimidin
5 parts of sodiumdibutyl-naphthylsulfonat,
3 parts of Naphthalinsulfon acid n-Phenolsulfon acid n-FormaldehydKondensat 3:2:1,
10 parts kaolin,
12 parts of Champagne chalk;

b) of 40 parts active substance
5 parts lignin sulfone acid sodium salt,
1 part Dibutyl-naphthalinsulfon acid sodium salt,

54 parts of silicic acid;

c) of 25 parts active substance

4,5 parts calcium Ligninsulfonat,

1,9 parts of Champagne chalk/Hydrixyäthylcellulose mixture (1:1),

1,5 parts of sodium-dibutyl-naphthalinsulfonat,

19,5 parts of silicic acid,

19,5 parts of Champagne chalk,

28,1 parts kaolin;

d) of 25 parts active substance

2,5 parts of Isooctylphenoxy-polyoxyäthyläthanol,

1,7 parts of Champagne chalk/hydroxy ethyl cellulose mixture (1:1),

8,3 parts of sodiumaluminiumsilikat,

16,5 parts of Kieselgur,

46 parts kaolin;

e) 10 parts Active substance or mixture,

3 parts Mixture of sodium salts of saturated fat alcohol sulfates,

5 parts of Naphthalinsulfon acid /formaldehyde condensate,

82 parts kaolin.

The active substances are intimately mixed in suitable mixers with the aggregates and on appropriate mills and rollers to grind. One maintains wettable powder from excellent wettability and abilityability ability, with water to suspensions of the desired concentration dilutes itself and in particular for sheet application (for stature delay -----) leave to use.

Example 11: Emulsive concentrates

For the production of a 25%igen of emulsive concentrate the following materials are used:

25 parts of 2-Phenyl-4-chlor-6-methyl-pyrimidin

5 parts of dimethylformamides,

57,5 parts xylene.

Example 12: Paste

For the production of a 45%igen paste the following materials are used:

a) of 45 parts of 2-Phenyl-4-chlor-6-hydroxy-pyrimidin or a mixture of it with 2-Chlor-2',6' diäthyl n (methoxymethyl) - acetanilid,

5 parts of sodiumaluminiumsilikat,

14 parts of Cetylpolyläthylenglykoläther with 8 mol ethylene oxide,

1 part of Oleylpolyäthylenglykoläther with 5 mol ethylene oxide,

2 parts spindle oil,

23 parts water,

10 parts PL glycol;

b) 45 parts of the above active substance or the mixture,

5 parts of Aethylenglykol,

3 parts of Octylphenoxypolyäthylenglykol with 9-10 mol ethylene oxide per mol of Octylphenol,
3 parts of a mixture of aromatic Sulfonulfonic acid n, condenses with formaldehyde as ammonium salt,
1 part of Siliconöl in form of a 75Zigen emulsion,
0,1 parts of a mixture of 1 (3-Chlorallyl) - 3-methyl-1,2,4-triazolium-adamantan-chloride with sodium carbonate, chloride value at least 11.5%,
0,2 parts of biopolymere thickening with max. 100 germs per gram,
42,7 parts water.

D IE active ingredient is intimately mixed with the aggregates in devices suitable for it and to grind. One maintains a paste, of which by diluting with water suspensions of each desired concentration can be made.

Biological examples:

To adjust the ability of the 2-Phenylpyrimidine plant growth, respectively the plant metabolism to affect can be seen from the following examples.

Example 13:

Stature inhibition *Solanum* and *Avena*

In plastic pots with sterilized earth the plants become *Solanum* (tomato) and *Avena sativa* (culture oats) and in the greenhouse attraction. Irrigation, temperature control and lighting took place as required. Two weeks after Ansaat the application with 4 kg active substance per hectare with a Brühe which took place via diluting a 257.igen of emulsion concentrate with a quantity of water from 500 liters/hectar became available. Two weeks after the application that is judged plant growth. The stature height is measured and expressed in % as a check (K = 1007.). The following side effects are determined:

X • light necrosis

Y • strong necrosis

L • light chlorose

C = strong chlorose

B = sheet deformation

The results are as follows:

Verbindung No.	Solanum		Avena	
	% Wuchshöhe	Nebenwirkung	% Wuchshöhe	Nebenwirkung
13	0	Y	100	-
14	65	L X	100	-
15	40	L X	100	-
41	40	L X	100	-
53	100	-	75	X
54	100	-	75	X
67	15	L B	100	-
70	65	L X B	100	-
441	65	B X	100	-
529	65	C	100	-
557	50	-	100	-
578	0	Y	100	-
579	75	X	100	-
581	15	L X B	85	-
586	40	B Y	100	-
592	65	-	100	-

Example 14:

Root growth (30 day experiment)

For the investigation of root growth the culture took place in crates filled with earth (60 x 40 x 80 cm) for seed treatments and in tubes filled with earth (10 x 100 cm) for post office applications.

The products become as seed pickling (45-500 mg per kg of seed) or directly after the seed as Bodenbehandlungen (0.1-1.0 kg/hectars) or 2 weeks after Ansaat as post office application (0.3-3.0 kg/hectar) as diluted aqueous emulsion applied.

As the culture the containers in climatic chambers under controlled conditions are regarded.

The evaluation of the roots takes place 30 days after application, after the earth was carefully washed.

Root length and root weight are intended and expressed in % for untreated control (= 100%).

The results are as follows:

Verbindung No.	Kultur	Applikation	Wurzellänge %	Wurzelgewicht %
1	Weizen	Saatbeizung mg/kg Saat		
		45	103	106
		150	106	97
		500	106	111
1	Soja	45	97	123
		150	102	110
		500	95	95
1	Weizen	Post-Applikation kg/ha		
		0,1	108	117
		0,3	91	117
		1,0	99	91
200	Weizen	0,3	120	112
		1,0	110	116
		3,0	110	120
200	Baum- wolle	Bodenbehandlung kg/ha		
		0,1	113	115
		0,3	111	115
		1,0	105	104
	Weizen	0,1	101	117
		0,3	98	116
		1,0	98	119

Example 15:

Wurzelwachsgum (10 days experiment)

For the investigation of root growth the culture takes place in corrosion free cylinders filled with earth (5 x 30 cm).

The products become as seed pickling (13-150 mg/kg of seeds) or directly after the seed as Bodenbehandlung (soil drench) (0,1-10 kg/hectars) applied as diluted aqueous emulsions.

After the Ansaat (10 seeds/cylinders) the cylinders in climatic chambers under controlled conditions are held.

The evaluation of the roots takes place 10 days after Ansaat after the earth was carefully washed.

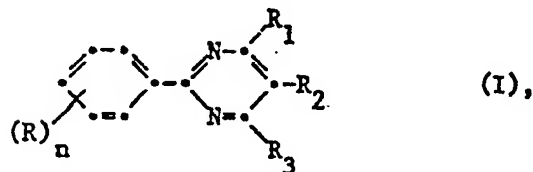
The root length and the being rooted skirt weight are measured. The expression of the results takes place in % to untreated control (= 100%).

The results are as follows:

Verbindung No.	Kultur	Applikation	Wurzellänge %	Wurzelgewicht %
1	Weizen	Samenbeizung mg/kg Saat		
		13	105	118
		45	101	118
2	Weizen	150	106	126
		13	101	90
		45	103	105
18	Weizen	150	114	95
		13	95	110
		45	96	110
31	Weizen	150	91	98
		13	111	100
		45	106	86
200	Baumwolle	150	109	93
		Bodenbehandlung kg/ha		
		0,1	113	115
		0,3	111	115
		1,0	105	104

Patent claims:

1. Procedure for the adjustment of plant growth, by the fact characterized that one the plants, whose seed or cultivated area treats I with an effective quantity of a Phenylpyrimidins of the formula



where

n a number from 1 to 5,

R hydrogen,

Halogen, Nitro, Cyan, $-XR_5$, $-NR_6R_7$, $-CO-A$, $-CS-NR_6R_7$,
 $-SO_2-NR_6R_7$, $C(OR_4)_2-R_4$, $\begin{smallmatrix} & R_4 \\ & | \\ -C- & \\ & | \\ & R_4 \end{smallmatrix}$, $-PO(OR_4)_2$, $-SO_3H$, $-N=CR_8R_9$,

one

unsubstituted or by halogen, -XRS' - NR6R7 - PO (OR4) 2 - CO-A or cyanogen substituted
 C1-C6-Alkyl or C3-C6-Cycloalkylgroup or an unsubstituted or by halogen or -XR4 substituted
 C2-C6-Alkenyl, C3-C6-Cycloalkyl or C3-C6-Alkynylgroup,

R1 and R3 independently for each hydrogen, halogen, C1-C6-Alkyl, cyanogen, -CO-A, -NR6R7, -XRS
 or unsubstituted or by halogen, C1-C4-Alkyl, Nitro or -XRS substituted Phenyl,

R2 hydrogen, halogen, unsubstituted or by halogen, C1-C4Alkyl, tri fluorine methyl, Nitro or -XRS
 substituted Phenyl or an unsubstituted or by halogen or -XRS substituierte' C1-C6-Alkyl
 C3-C6-Cycloalkyl C2-C6-Alkenyl or C2-C6-Alkynyl-group,

R4 hydrogen, an unsubstituted or by halogen, -CO-A, hydroxy, C1-C6-Alkoxy or -NR6R7 substituted
 C1-C6-Alkyl or C3-C6-Alkenyl or C2-C6-Alkynylgroup,

R5 the same like R4, in addition C1-C6-Alkylcarbonyl, C3-C6-Alkenylcarbonyl,
 C3-C6-Alkynylcarbonyl,

R6 and R7 independently for each hydrogen, C2-C6-Alkenyl, C2-C6-Alkynyl or unsubstituted or
 through -CO-A substituted C1-C6 alkyl, or one of the remainders of R6 and R7 means a group -COA or
 -OR4 or

R6 and R7 together 4 - to 6-gliedrige an alkyl chain, which can be interrupted by oxygen, sulfur, one
 lmino or C1-C4-Alkylaminogroup,

B a branched or normal C1-C6-alkylene chain and

X oxygen, sulfur, -SO or -S02 mean;

A the same meaning as R4 has or for -OR4 or -NR6R7 stands,

R8 unsubstituted or alkyl replaced with C1-C6-Alkoxy.

R9 hydrogen or the same like R8 or
R8 and R9 together a 4-S-gliedrige alkyl chain mean.

2. In accordance with procedure of claim 1 characterized that one the plants, whose seed or cultivated area treats I with an effective quantity of a Phenylpyrimidines of the formula, where

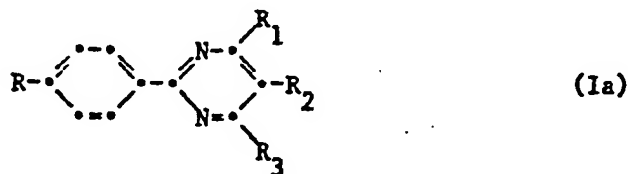
n a number from 1 to 3,

R hydrogen, halogen, Nitro, cyanogen, C1-C4-Alkyl, C1-C4-Halogenalkyl, C1-C4-Cyanoalkyl, hydroxy, (C1-C4-Alkoxy) n' C1-C4-Halogenalkoxy C2-C8-Halogenalkoxyalkyl, C2-C4-Alkenyl, C2-C4-Balogenalkenyl, C2-C4-Alkenyloxy, C2-C4-Alkynyl, Sulfhydryl, C1-C4-Alkylthio, carboxyl, C1-C4-Alkylcarbonyl, C1-C4-Alkoxycarbonyl, C2-C4-Alkenylcarbonyl, C2-C4-Alkynylcarbonyl, C1-C4-Alkylcarbonyl-C1-C4-alkyl, C1-C4-Alkylcarbonyloxy, C1-C4-Alkylaminocarbonyl, C1-C4-Dialkylaminocarbonyl, amino, C1-C4-Alkylamino, C1-C4-Dialkylamino, acetyl amino, chlorine acetyl amino, Methylureido, Dimethylureido, sulphonyl, C1-C4-Alkylsulfonyl, Sulfamoyl, C1-C4-Alkylsulfamoyl, C1-C4-Dialkylsulfamoyl, C1-C4-Alkoxycarbonylsulfamoyl, C1-C4-Dialkoxyphosphonylmethyl

R1 and R3 independently for each hydrogen, halogen, C1-C6-Alkyl, cyanogen, hydroxy, C1-C6-Alkoxy, C2-C8-Alkoxyalkyl, Phenyl, Phenoxy, C1-C4-Alkoxycarbonyloxy, amino, C1-C4-Alkylamino, C1-C4-Dialkylamino, Morpholino, Sulfhydryl and

R3 hydrogen, halogen, C1-C6-Alkyl, C1-C6-Halogenalkyl or Phenyl mean.

3. Procedure in accordance with claim 1, by the fact characterized that one the plants, whose seed or cultivated area treats 1a with an effective quantity of a Phenylpyrimidins of the formula,



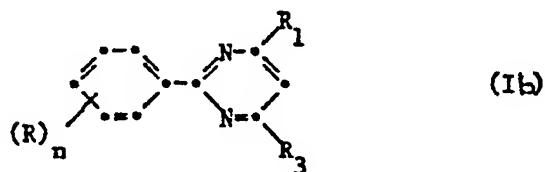
Where R hydrogen or methyl

R1 hydrogen, halogen, C1-C6-Alkyl, hydroxy, C1-C6-Alkoxy, C2-C8-Alkoxyalkyl, Phenyl, Phenoxy, C1-C4-Alkoxycarbonyloxy, amino, C1-C4-Alkylamino, C1-C4-Dialkylamino, Morpholino or Sulfhydryl,

R2 hydrogen, halogen, C1-C6-Alkyl or Phenyl,

R3 halogen, hydroxy, C1-C6-Alkoxy, C2-C8-Alkoxyalkyl, Phenoxy or Sulfhydryl mean.

4. Procedure in accordance with claim 1, by the fact characterized that one the plants, whose seed or cultivated area treats with an effective quantity of a Phenylpyrimidins of the formula 1b



where n, R, R1 and R3 have the meaning given in the claim 1.

5. Procedure in accordance with claim 1, by the fact characterized that one the plants, whose seed or cultivated area treats 2-Phenyl-4,6-dichlorpyrimidins with an effective quantity.
6. Procedure in accordance with claim 1, by the fact characterized that one the plants, whose seeds or cultivated area with an effective quantity of 2 (4-Methoxycarbonylamidophenyl) - 4,6-dichloropyrimidin treats.
7. Procedure in accordance with claim 1 for the stature inhibition in the sense of an increase of the buckling resistance and Hal mverkürzung with the grain places oats, wheat, barley or rye.
8. Procedure in accordance with claim 1 for the stature inhibition with grasses and weeds.
9. Procedure in accordance with claim 1 for the stature adjustment with Soja in the sense of increased returns.
10. Procedure in accordance with claim 1 for the stature inhibition of Bodenbedeckerpflanzen.
11. Procedure in accordance with claim 1 for the stature adjustment of cotton plants in the sense of increased returns.
12. Procedure in accordance with claim 1 for the stature adjustment with grain plants in the sense of increased returns.
13. Procedure in accordance with claim 1 for the stimulation of the root growth of germinating useful plants.
14. The use of the Phenylpyrimidine of the formula I for the adjustment of plant growth, by the fact characterized that one defined one in accordance with claim 1 compound in an effective quantity on the seeds, which applied plant or their location.